



The Effect of Motion Graphic Animation Videos on the Level of Final Exam Anxiety of Grade XII Students at MAN 3 Cijantung

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[Creative Commons Attribution-ShareAlike 4.0 International License](#)**Abstract**

Background: A negative emotional response to real or imagined threats accompanied by personal experiences such as stress, fear, and feelings of uneasiness is called anxiety. Adolescents aged ten to twelve most often experience anxiety disorders. **Objectives:** The purpose of this study was to determine how motion graphic animation videos affect students' anxiety levels before the final exam of class XII at MAN 3 Cijantung. **Methods:** This research method is quasi-experiment with pre-test post-test with control design and non-probability sampling technique with 36 students in class XII. **Results:** The results of the study in the intervention group and control group experienced significant changes in the mean score and anxiety level. In the intervention group before treatment was 37.89 and decreased to 22.17 with a minimum score of 12 or no anxiety (p-value 0.001). In the control group, the mean score was 31.21 to 29.06 with a minimum score of 19 (p-value 0.047). **Conclusions:** The conclusion of this study is the p-value analysis test of 0.007 (p-value <0.05) which shows that the provision of animated videos is more effective in overcoming anxiety disorders. Distraction using this animated video can be used as an alternative way that can be used to overcome anxiety.

Keywords: Animated video; Anxiety; Final exam.

Introduction

Anxiety is a common emotional disorder experienced by adolescents, especially before important moments such as final exams. Data from the World Health Organization (2021) states that the prevalence of anxiety disorders is 3.6% in the 10–14 age group and increases to 4.6% in the 15–19 age group. Approximately one-third (34.9%) of adolescents experience conditions related to mental disorders. Crisis situations, lack of knowledge, unmet needs, feelings of helplessness, and lack of control over life circumstances are all factors that can cause anxiety¹. If stress is not addressed immediately, it can have worse consequences,

such as depression, frustration, anxiety, or even worse, self-harm and suicide². Data from the National Criminal Information Center (Pusiknas) over the past five years shows that suicide rates have continued to rise, reaching 60%.

The Indonesia National Adolescent Mental Health Survey (2022) found that around 26.7% of children aged 10–17 experience anxiety, with West Java being one of the provinces with the highest rates, at 7.8%³. Unresolved anxiety disorders can double the risk of depression compared to those who do not experience anxiety. 280 million people worldwide suffer from depression, and among them, many have a history of anxiety disorders. This situation

highlights that anxiety disorders in adolescents are a serious issue requiring attention and intervention.

Anxiety in Latin (anxious) refers to negative effects and physiological stimuli⁴. Anxiety is a response to situations that involve growth, change, and new experiences⁵. Anxiety prior to final exams can have a significant impact on students' academic performance and mental well-being. Those who experience high levels of anxiety tend to have difficulty concentrating, reduced memory, and even physical symptoms such as insomnia and muscle pain. Exam stress can affect students' learning ability, reduce memory, and disrupt psychological well-being⁶. According to Sulistiawan (2016), studies conducted in several schools in Yogyakarta show that school exam scores can predict national exam scores⁷. Education is not only related to academic factors, but is also influenced by non-academic factors. Similarly, external factors can include the environment, facilities, social systems, natural conditions, economics, and so on. Meanwhile, internal factors include physical and mental health and emotions⁸. Pressure from the school environment and family to achieve high scores further exacerbates this condition. Indicates that exam anxiety is closely linked to decreased academic performance, where students struggle to recall material and lose focus during exams⁹. Students experiencing exam anxiety may face difficulties in concentrating, reduced academic performance, sleep disturbances, and other physical disturbances¹⁰. Excessive stress can affect students' learning quality, such as reducing their desire to go to class, skipping assignments, or even abusing illegal substances¹¹. These issues must be addressed promptly, as failure to do so may have future consequences and lead to psychological problems, including anxiety¹².

Current technological advances enable the use of video media, one of which is animated

video. This is in line with previous research, which shows the influence of audiovisual media on knowledge and attitudes¹³. There are two ways to deal with anxiety: pharmacology, which involves administering medication that can reduce anxiety, and non-pharmacology, which involves the use of aromatherapy, relaxation techniques, hypnotherapy, distraction, music therapy, and massage¹⁴.

Non-pharmacological interventions such as distraction techniques have been proven effective in reducing anxiety. One potential distraction method is audiovisual media in the form of animated video. Dynamic visual media that combines images, sound, and narration to convey information in an engaging and interactive manner is also known as motion graphics. Several studies support the effectiveness of this medium. To create a dynamic visual experience, elements such as video, 2D/3D animation, typography, film, illustration, photography, or music must be utilized¹⁵. Showing cartoons can significantly reduce children's anxiety during injection procedures¹⁶. Similar results indicate that animated videos are the most effective compared to other media in reducing children's anxiety during infusion procedures¹⁷. Respondents can learn independently if they use video media. The advantage of this method is that it is very flexible and can be learned at any time¹⁸. Other research shows that animated videos about COVID-19 prevention are effective in reducing anxiety among the elderly. The results of this research indicate that audiovisual media, particularly animation-based media, can serve as an effective alternative intervention across various age groups.

A preliminary study conducted on 12th grade students at MAN 3 Cijantung showed that the majority of students (60%) experienced moderate anxiety prior to their final exams. This finding underscores the need for

interventions that can effectively and enjoyably address students' anxiety. Therefore, the objective of this study is to identify the impact of motion graphic animation videos on the level of final exam anxiety among 12th-grade students at MAN 3 Cijantung.

Materials and Methods

Research Design

A quasi-experimental design and a pretest-posttest design with a control group were used in this study, which consisted of two main groups, namely the treatment group and the control group, to conduct pre-tests and post-tests. The intervention group was distracted by watching animated videos, while the control group was given deep breathing relaxation treatment.

Sample

The population of this study consisted of all 85 students in grade XII at MAN 3 Cijantung. The sample consisted of 36 respondents, with 18 students in the intervention group and 18 students in the control group. The sample size was calculated using the Isaac and Michael formula.

Data Collection Techniques

Data was collected by distributing questionnaires, using the Hamilton Anxiety Rating Scale (HARS) as the instrument, which consists of 14 questions with several symptom indicators. There are five levels of anxiety: 0 = no anxiety, 1 = mild anxiety, 2 = moderate anxiety, 3 = severe anxiety, and 4 = very severe anxiety. The HARS instrument was found to be valid and reliable, with a total of 10 questions replaced without removing any questions, and a Cronbach's alpha value of 0.727¹⁹. This indicates that the instrument is trustworthy.

Data Analysis Techniques

Data analysis was conducted in two stages. Univariate analysis was used to identify respondent characteristics based on major and gender. Meanwhile, bivariate analysis was used to determine whether there were differences in anxiety levels after being distracted by motion graphic animation videos. To find significant changes in anxiety levels, a paired t-test was used on both the pretest and posttest results.

Ethical Consideration

Respondents were first given information about the purpose, stages of implementation, and benefits of this study, then asked to sign an informed consent form to ensure that participants participated voluntarily and were not coerced. This research has been declared ethically sound with the number:

No.DP.04.03/F.XVIII/KEPK/239/2025.

Results

Table 1. Respondent characteristics based on major, gender, and distribution of anxiety levels

Variable	Intervention Group		Control Group	
	n	%	n	%
Major				
IPA	6	33	6	34
IPS	9	50	12	66
Agama	3	17	0	0
Gender				
Male	8	44	6	67
Female	10	56	12	33
Pre-test Anxiety Level				
Moderate	4	21	11	61
Anxiety				
Severe Anxiety	6	33	2	11
Extreme Anxiety	8	46	5	28
Post-test Anxiety Level				
No Anxiety	1	6	0	0
Mild Anxiety	8	43	4	22
Moderate	7	39	8	45
Anxiety				
Severe Anxiety	1	6	6	33
Extreme Anxiety	1	6	0	0
Total	18	100	18	100

Source: Primary data, processed using SPSS (2025)

The results of Table 1 show that most respondents were from the social studies department (58.33%). Of the 36 students who experienced anxiety, 21 students (58.33%) were female, while 15 students (41.67%) were male. The pretest results, or anxiety levels before the intervention, showed that most students experienced severe anxiety (50%). The post-test results, or anxiety levels after the intervention, showed that most students experienced moderate (41.7%) and mild anxiety (33%).

Table 2. Distribution of average scores before and after treatment in the intervention group and control group

Variable	Mean	SD	Min-Max
Pre test Intervention	37.89	8.963	21-54
Pre test Control	31.21	9.698	18-48
Post test Intervention	22.17	7.398	12-42
Post test Control	29.06	6.907	19-42

Source: Primary data, processed using SPSS (2025)

The results presented in Table 2 indicate differences in anxiety levels between groups. Before intervention, the treatment group showed a mean anxiety score of 37.89 (SD 8.963), while the control group had a mean score of 31.21 (SD 9.698). After receiving distraction through animated videos, the intervention group demonstrated a marked reduction, with a mean anxiety score of 22.17 (SD 7.398), classified as moderate anxiety. In contrast, the control group, which did not receive the animated video distraction, showed a smaller change, with a post-treatment mean anxiety score of 29.06 (SD 6.907), remaining within the severe anxiety category. Overall, these findings suggest that animated video distraction is more effective in reducing anxiety

levels than standard treatment alone in this study.

Table 3. Distribution of differences in anxiety levels before and after treatment in the intervention group and control group

Variable	Mean	SD	Difference Mean	P.Value
Intervention				
Pre test	37.89	8.963	15.72	<0.001*
Post test	22.17	7.398		
Control				
Pre test	31.21	9.698	2.15	0.047**
Post test	29.06	6.907		

Source: Primary data, processed using SPSS (2025)

*.Significant, $p < 0.05$

**.Significant, $p < 0.05$

Table 3 shows the statistical test results obtained in the intervention group and the control group with p -values of 0.001 and 0.047 ($p < 0.05$), which means that there was a significant difference before and after treatment.

Table 4. Comparison of anxiety levels before and after treatment in the intervention group and control group

Variable	On Average	SD	P.Value
	Intervention Group	Control Group	
After	22.17	7.398	0.007*
	29.06	6.907	0.007**

Source: Primary data, processed using SPSS (2025)

*.Significant, $p < 0.05$

**.Significant, $p < 0.05$

Based on Table 4 of the t-test results, a significance value of 0.007 ($p < 0.05$) was obtained, indicating a difference in the mean scores and anxiety levels between the intervention group and the control group after treatment.

Discussion

The results of the study show that the highest level of anxiety was experienced by social studies students (50%). Social studies subjects tend to experience higher levels of stress because students must understand and memorize a lot of material, especially before national exams, as the material differs from what is studied on a daily basis²⁰. Economics and accounting are among the subjects that are quite complex and require deep and difficult understanding, which can affect students' attitudes and psychology. Conversely, science students experience more anxiety due to the burden of quantitative analysis, such as mathematics and other formulas²¹. Religious studies students exhibit lower levels of anxiety, likely due to the spiritual approach and religious values they practice. This finding is supported by research by Ukhtia et al. (2017), which found a negative correlation between levels of religiosity and academic anxiety²².

Based on the results of a study of a total of 36 students experiencing anxiety, the majority were female (58.33%). The results indicate that females are more anxious than males. This is because the biological makeup of females and males is different. Females have higher levels of estrogen, which is known to contribute to mood disorders, making them more emotional²³. In addition, several factors can influence stress levels, one of which is self-confidence. The gender of adolescents can affect their stress levels. Men and women respond to stress in different ways. Stress causes the release of certain hormones in women, which cause anxiety and fear, and women's brains respond to stress in a negative way²⁴. Men tend to experience stress due to workloads, while women tend to be more vulnerable to stress due to the pressures and demands of dual roles²⁵. Students with low self-confidence are 18.857 times more likely to experience stress than students with high self-

confidence. Emotional regulation also influences stress levels; the better the emotional regulation, the lower the stress level²⁶.

Anxiety levels prior to treatment showed that the majority of students in both research groups were in the severe to very severe anxiety category. The intervention group had an average anxiety score of 37.89 (SD 8.963), while the control group had an average of 31.21 (SD 9.698). Based on academic majors, students in the Social Sciences major had the highest proportion of anxiety. Fifty percent of all Social Sciences students experienced severe or very severe anxiety. Somatics and cognitive indicators among social science students tend to be high, especially in relation to mathematics²⁷. Meanwhile, in the Natural Sciences major, high anxiety levels were also significant. In the Religion major, students' anxiety levels are generally lower. Only a few students experience severe anxiety, and the rest are at moderate levels. This is likely due to the stronger spiritual approach in this major's curriculum, where students with higher religiosity typically have lower anxiety levels.

After receiving treatment, the results of the study showed that the average score and anxiety level of the intervention group decreased significantly from severe to moderate, with a final score of 22.17 (SD 7.398). Some students even experienced a drastic decrease, from severe anxiety to mild or no anxiety at all. In contrast, the control group also showed a decrease in anxiety, although not as strong as the intervention group, with a final average score of 29.06 (SD 6.907). The effectiveness of the animated video on the intervention group was evident from the students' responses, who became calmer, were able to apply coping strategies, and showed more positive emotional expressions. This indicates that audiovisuals can serve as a powerful distraction tool to shift focus away from anxiety and stimulate hormones such as

dopamine and serotonin, which play a role in reducing stress. Watching anime is an example of audiovisual distraction therapy that has an impact on children's anxiety levels during injection procedures²⁸. Providing intervention in the form of cartoon videos can reduce preoperative anxiety levels in preschool children²⁹.

According to the results of the above study, the intervention group experienced a significant reduction in anxiety compared to the control group. Before receiving treatment, the average anxiety score of the intervention group was 37.89 and decreased to 22.17 after being given distraction through animated videos, with a difference in reduction of 15.72. Meanwhile, the control group experienced a decrease from 31.21 to 29.06, with a difference of 2.15. The difference in reduction was 13.57, indicating that animated videos as an audiovisual medium are more effective in reducing anxiety than deep breathing relaxation. Distraction with cartoons significantly reduces children's anxiety during medical procedures and is more effective than music distraction³⁰.

Statistical tests show a p-value of <0.047, meaning that the intervention and control groups had different results before and after treatment. This supports the hypothesis that the intervention was effective in reducing anxiety. However, distraction videos were not significant in reducing anxiety in adolescents. This was attributed to the participants' loss of focus due to academic pressure and limited time³¹.

The results of the analysis show that there is a significant difference between the intervention group and the control group after treatment. The independent sample t-test yielded a significance value of $p=0.007$ ($p<0.05$). This indicates that the alternative hypotheses (H_a_1 and H_a_2) are accepted, meaning that the intervention had an effect. Animated videos are not merely distractions

but also serve as educational tools that promote self-awareness, emotional management, and academic motivation. Positive messages displayed visually can shape adaptive and optimistic thinking patterns, thereby significantly reducing anxiety. Meanwhile, relaxation techniques such as deep breathing in the control group are more passive and do not address deeper psychological aspects, resulting in less lasting effects.

Conclusion

Significant differences in anxiety levels were observed between the intervention group, which was shown motion graphic videos, and the control group, which did not receive any distraction treatment. The intervention group experienced a higher average decrease in anxiety scores, from 37.89 to 22.17, compared to the control group, which decreased from 31.21 to 29.06. The p -value <0.047 indicates that this difference is statistically significant. Therefore, distraction using motion graphic animation videos was proven to be more effective in reducing final exam anxiety levels among 12th-grade students at MAN 3 Cijantung. Based on the research findings, it is recommended that 12th-grade students at MAN 3 Cijantung regularly watch and apply the strategies from the animation videos at least 1–2 times per week leading up to the final exams to help manage anxiety independently. The school is encouraged to integrate animated videos on mental health into counseling programs and conduct discussions at least twice a month. For educational institutions, the research findings are expected to serve as scientific information that can be used as evidence-based nursing in addressing anxiety disorders. Meanwhile, this study is hoped to be applied as a reference for similar research by future researchers.

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Conflict of Interest Statement
The author(s) declare no commercial, financial, or personal conflicts of interest related to this research. All authors approved the final manuscript and consented to its publication in *Healthy Tadulako Journal*.

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